I. The Amendments

Claim 61 has been amended to delete the abbreviation "APC" as requested by the Examiner to prevent confusion with other subject matter in the specification. Support for introducing the type of cell into claim 61 can be found at page 8, lines 4-31, page 41, lines 31-33, and page 43, lines 9-16. The amendments were done to put the claims in condition for allowance and to promote administrative efficiency. The amendments do not require a new search or raise new rejections because they are responsive to issues already raised by the Examiner. Applicants respectfully request entry of the amendments.

II. Drawings

Responsive to form PTO-948, formal drawings are enclosed (eight (8) sheets of five (5) figures. As such, the objection for correction of informalities should be withdrawn.

III. Specification

An abstract on page 131 is enclosed in response to the Examiner's request.

IV. Priority

The Examiner has argued that only claims 62-63, 65-67, 70, 74-76 and 79-82 are not entitled to the priority date of the provisional application, Serial Number 60/018,175, filed May 23, 1996. For claim 62, support is found at page 6, lines 3-5. For claim 63, support is found at page 6, lines 22-31. for claim 65, support is found in Exhibit I, third paragraph, lines 4-5. For claim 74, support for ICAM-1 is found in Exhibit I, pages 2-3.

Applicants thus contend that the claims discussed herein are entitled to claim priority to the provisional application. Applicants request reconsideration of the priority determination of the noted claims.

V. Oath/Declaration

Replacement Combined Declarations and Power of Attorney documents for five (5) inventors on four (4) documents of 2 pages each are enclosed. As such, the objection to the defective oaths of record should be withdrawn.

VI. Rejection under 35 U.S.C. §112, First Paragraph

Claims 61-84 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

A note of correction is necessitated to the rejected claim set as only claims 61-82 are presently pending. Applicants thus assume that the Examiner directed the present rejection of claims 61-82 and will address it as such. However, if not the proper assumption, Applicants request clarification of the rejected claim set.

The Examiner contends that the description of the present invention lacks the requisite structural and functional features of a broad genus of a synthetic antigen presenting cell that would meet the recited limitations of antigen presentation, with the exception of insect cells, and the accessory molecules B7.1, B7.2, ICAM-1, ICAM-2, ICAM-3, FASL, CD70 and LFA. The Examiner further argues that the present case is analogous to the requirements established in *Regents of California v. Eli Lilly & Co.*, 119F3d 1559, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997), where a description of a genus of cDNAs was determined as valid by "means of a recitation of a representative number of cDNAs, defined by a nucleotide sequence, falling within the scope of the genus, or of a recitation of the structural features common to the genus, which features constitute a substantial portion of the genus." The court actually held that the adequate description of claimed DNA requires a precise definition of the DNA sequence itself - not merely a recitation of its function or a reference to a potential method for isolating it (119 F.3d at 1566-67, 43 USPQ2d at 1406). In Enzo Biochem, the court clarified Eli Lilly in that the court did not hold that all functional descriptions of genetic material fail as a matter of

law to meet the written description requirement; rather, the requirement may be satisfied if in the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure. See *Enzo Became, Inc. v. Gen-Probe, Inc.*, 296 F.3d 1316, 1324, 63 USPQ2d 1609, 1613 (Fed. Cir. 2002).

Applicants argue that the Examiner has misapplied Eli Lilly to the present invention especially in view of a more recent decision by the Federal Circuit addressing the written description holding in Eli Lilly and Enzo Biochem. In *Amgen Inc. v Hoechst Marion Roussel, Inc and Transkaryotic Therapies, Inc.*, 2003 U.S. App. LEXIS 118, decided January 6, 2003, the court held that both Eli Lilly and Enzo Biochem were "inapposite to this case because the claim terms at issue here are not new or unknown biological material that ordinarily skilled artisans would easily miscomprehend." The claims in Amgen's patents referred to mammalian and vertebrate cell types that could be used to express recombinant human EPO. The court found that the words "mammalian" and "vertebrate" conveyed distinguishing information that was readily understood by one of ordinary skill in the art.

The same argument is applicable to the claim terms of the present invention. Here the claim terms of a cell, a MHC class II heterodimer, and an accessory molecule are well known to one of ordinary skill in the art of antigen presentation as evidenced by the art of record and the state of the art at the time the invention was made. Moreover, the scope of the claim terms are supported by exemplary description in the specification including specific examples of preferred embodiments. Exemplary cells for use in the present invention are described at page 40, beginning at line 14, continuing to page 49, line 6, and again at page 68, beginning at line 12, continuing to page 69, line 29. MHC class II genes and encoded heterodimers are described at page 18, beginning at line 19, continuing to page 21, line 2, and again at page 66, beginning at line 18, continuing to page 70, line 28. Accessory genes and the encoded proteins are described 21, beginning at line 4, continuing to page 24, line 2, and again at page 72, beginning at line 14, continuing to page 78, line 16. Thus, the Applicants have clearly conveyed,

with reasonable clarity to those of ordinary skill in the art, that as of the filing date, they were in possession of the claimed invention.

For the above reasons, Applicants submit that the rejections for lack of written description have been overcome to the pending claims to a synthetic antigen presenting matrix composition. As such, Applicants respectfully request that the rejections be withdrawn and the claims pass on to allowance.

VII. Rejection under 35 U.S.C. §112, First Paragraph

Claims 61-82 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with it is most nearly connected, to make and/or use the invention.

The Examiner has rejected the noted claims because the specification, while being enabling for a method of producing a synthetic antigen presenting cell comprising an insect cell and the accessory molecules of B7.1, B7.2, ICAM-1, ICAM-2, ICAM-3, FASL, CD70 and LFA, does not reasonably provide enablement for the method comprising any cell, nor any accessory molecule. The Examiner alleges that the specification does not enable any person skilled in the art to which it pertains, or with which it is connected, to practice the invention commensurate in scope with these claims.

To satisfy the enablement requirement, the specification need not explicitly teach those of ordinary skill in the art to make and use the invention. Instead, the requirement is met if, given what one already knows, the specification teaches enough that one can make and use the invention without undue experimentation. *Genentech, Inc. v. Novo Nordisk, A/S,* 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997). Although Applicants agree that the scope of enablement varies inversely with the degree of unpredictability of the technology involved, Applicants argue that they are not required to disclose every species encompassed by the claims. *In re Fisher*, 166

USPQ 18 (CCPA 1970). Applicants submit that "what the Patent Office is here attempting is to limit the claims to the specific examples, notwithstanding the disclosure of a broader invention. This it may not do." *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973).

In traversing this rejection, Applicants direct the Examiner's attention to the specification at page 41, beginning at line 41, and continuing to page 42, line 15, where Applicants determined that certain cell types, in particular eukaryotic cells that were less susceptible to temperature than mammalian counterparts, were preferred hosts for preparing synthetic antigen presenting cells of the invention. While the Applicants selected insect cells as the cell type in which to demonstrate how a synthetic antigen presenting cell is made and used, Applicants contend that the invention need not be so limited. Applicants need not make and use a synthetic antigen presenting cell with every species encompassed by the claims. Moreover, the specification provides sufficient support of a broadly claimed antigen presenting cell as well as teachings of how to make and use such a cell, such enablement beginning at page 23, continuing to page 34. Applicants have amended claim 61 to define the population of cells that are useful for practicing the present invention.

For the scope of MHC class II and accessory molecules, Applicants have presented exemplary description supportive of the claims and in view of what one of ordinary skill in the art already knows. Antigen presentation mediated by MHC class II molecules and accessory cells is well known to one of ordinary skill in the immunologic arts. Not every species of MHC class II heterodimer-encoding genes as well as accessory molecules need be made and used in the present invention to support the enablement requirement. The specification provides a thorough description of MHC class II genes, and accessory cells, preferred embodiments thereof and methods of making and using them.

Applicants thus assert that the specification teaches how to make and use a synthetic antigen presenting cell having the claimed characteristics and that one of

ordinary skill in the art would have known how to practice the claimed invention without undue experimentation at the time the invention was made. In view of the foregoing, the teachings in the specification of how to make and use the claimed invention, Applicants assert that they are entitled to claims commensurate in scope with the teaching in the specification.

For the above reasons, Applicants submit that the rejections have been overcome to the pending claims to the methods of making a synthetic antigen presenting cell. As such, Applicants respectfully request that the rejections be withdrawn and the claims pass on to allowance.

VIII. Rejection under 35 U.S.C. §112, Second Paragraph

Claims 61-82 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject mater which applicant regards as the invention.

The Examiner stated that claims 60-80 are indefinite in the recitation of "APC" as the acronym is used in the specification to identify two different synthetic antigen presenting systems. It appears that the Examiner has misidentified the rejected claim set as the pending claims are 61-82. Applicants, however, request clarification of the rejected claim set if the assumed proper claim set is in error. Claim 61 has been amended with APC being deleted.

In view of the amendment to pending claim 61, Applicants submit that the rejection for indefiniteness has been overcome. As such, Applicants respectfully request that the rejection be withdrawn and the claims pass on to allowance.

IX. Summary

Applicants believe that a complete response is provided in the foregoing amendments and remarks to each issue and grounds for rejection and objection raised by the Examiner. Applicants submit that patentable subject matter exists with regard to the pending claims and therefore respectfully request favorable action and entry of the

presents Amendments and Response. The application is now believed to be in proper condition for allowance and early notification of allowance is earnestly solicited. The Examiner is invited to telephone the undersigned if it would be deemed helpful to advance the application.

Respectfully submitted,

1/15/03
Date

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APPENDIX I

IN THE CLAIMS

Please enter the amendments to claim 61 below.

61. A method of producing an eukaryotic poikilothermic synthetic antigen presenting cell [(APC)] comprising:

a) transforming a cell with an expressible MHC class II α-chain gene operably linked to a first promoter in a vector capable of expressing a MHC class II α-chain;

b) transforming a cell with an expressible MHC class II β-chain gene operably linked to a second promoter in a vector capable of expressing a MHC class II β-chain; and

c) transforming a cell with a first expressible accessory molecule gene operably linked to a third promoter in a vector capable of expressing an accessory molecule.